

## ABSTRACT OF THE DISCLOSURE

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The invention relates to a HF power supply device including an oscillator (11) outputting a HF signal, an amplifier (12) amplifying the output of the oscillator for supplying a HF output to a load, and a DC power supply (13) to supply a DC power voltage to the amplifier (11). The power supply device further includes a loss calculator (18) calculating a loss in the amplifier (11), a first controller (19) controlling the output of the power supply (13) and a second controller (20) controlling the output of the oscillator (11) or amplifier (12). When the calculated loss by the calculator (18) exceeds a predetermined loss set value, the first controller (19) lowers the output power voltage of the power supply (13) to make the calculated loss equal to the loss set value. When the calculated loss is no greater than the loss set value, the first controller (19) maintains the output power voltage at an appropriate DC voltage set value, while the second controller (20) controls the output of the oscillator (11) or amplifier (12) so that the HF output to the load from the amplifier (13) approaches a HF output set value.